Calvarial hemangioma causing seizure disorder: A case report with review of literature

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Abstract

Calvarial hemangiomas are rare benign tumours of the skull bone for which seizure as a presentation is unusual; neurological deficits are uncommon.

We report a case of cavernous hemangioma of the parietal bone causing seizure disorder in a 47 year old man. The tumor was removed enbloc with satisfactory methylmethacrylate cranioplasty. Pathological examination confirmed the diagnosis. Patient received short course of antiepileptic drugs with satisfactory recovery. This case demonstrates that seizure disorder can occur in Calvarial haemangiomas as a rare complication. A review of relevant literature is included herein.

Keywords: cavernous hemangioma, calvarium, epilepsy, seizure disorder

Introduction

Intraosseous cavernous haemangiomas are rare benign tumors that constitute 0.7% to 1% of all bone tumors. They are commonly seen along the vertebral column especially in the thoracic spine (1, 2, 27). Calvarial cavernous haemangioma is very rare, constituting about 0.2% of all benign neoplasms of the skull (19, 23). Hemangiomas arise from the intrinsic vasculature of the bone, and in the skull, the diploe. Neurological deficit from calvarial haemangiomas is not common and seizure disorder from calvarial hemangioma is rare (19). The authors present a case of calvarial haemangioma of the parietal bone causing seizure disorder.

Case Report

A 47 year old male teacher was seen in 2007 on account of right-sided parietal swelling of 5 months duration. Swelling gradually increased in size and became painful 2 months prior to presentation. Pain was dull in nature, non-radiating, relieved by analgesic but no known aggravating factor. No history of trauma to the head and no similar swellings in other parts of the body. The patient had two episodes of left-sided partial seizures with secondary generalization a week prior to presentation with associated post-ictal sleep. There was no fever or history suggestive of thyrotoxicosis.

Examination revealed a swelling over the Right parietal prominence measuring ≈4cm x 4cm, tender but not differentially warm. It had bony hard consistency, appeared to be in continuity with the bone and was not attached to the overlying skin.

Emptying sign was negative and there was no bruit. There were no enlarged peripheral lymph nodes, and no other abnormal findings on general and neurologic examination.

Skull x-ray showed a well circumscribed radiolucent lesion in Right parietal bone with a sclerotic rim (Figure 1 A, B). CT scan of the brain revealed a mixed density lesion on the right parietal bone and discontinuity of the cortical surface on the outer table of the skull in the lytic portion of the tumor (Figure 1 C-E).

A right parietal craniectomy was performed with excision of a rim of normal bone.

Findings at surgery included a fleshy well circumscribed tumour of the bone, expansile in nature and vascular, compressing on the dura but not attached to it. Surrounding bone was thickened in the parietotemporal region. Tumour was not attached to overlying skin (Figure 2 B - D). Cranioplasty was performed with methylmethacrylate.

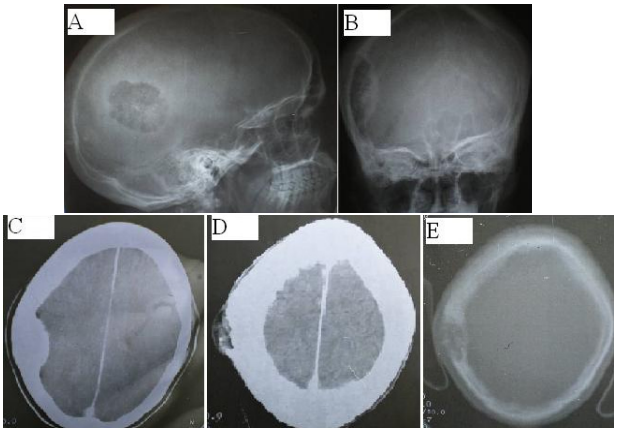

Figure 1 Radiological features of the lesion; **A-B** show web-like trabecular pattern or sunburst appearance on skull radiograph. **C-E**: CT images showing expansile bony lesion with compression of the underlying brain **(C-D)** and erosion of both outer and inner tables of the skull **(E)**

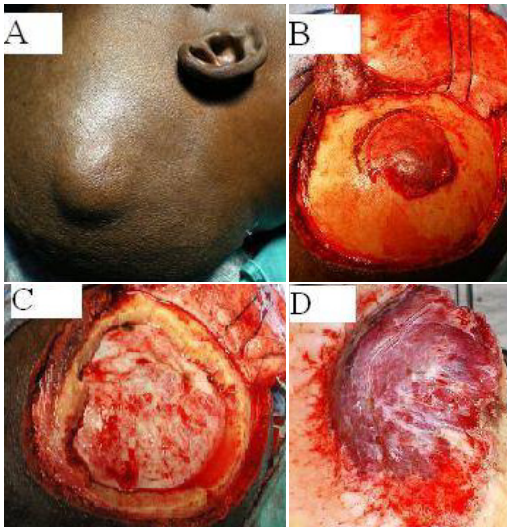

Figure 2 Perioperative images of the lesion as described in the text. The resultant bony defect **(C)** was replaced with methylmethacrylate.

Histological section showed interconnecting trabeculae of bone within which are numerous dilated large caliber thin walled blood vessels lined by flat endothelial cells. Few of these vascular channels showed branching. Features are consistent with cavernous haemangioma.

Anti-epileptic drugs (Epanutin, Pfizer Pharmaceuticals) was continued in the post-operative period and discontinued after one year seizure-free period.

Patient has remained neurologically intact.

Discussion

Intraosseous Hemangiomas occur in patients of all ages with a peak incidence about the 4th decade (7, 12, 13, 27). They are commoner in females than males (4, 7, 16, 27).

Haemangiomas are slow-growing and as such takes months to years before symptoms manifest (3). Depending on location, signs and symptoms vary, but neurological deficits due to intracranial

expansion is rare (19). Common clinical features include pain and bony deformity with occasional pathological fractures (20, 26). Lesions in the temporal region may cause facial nerve paralysis, hearing loss or vestibular symptoms (9, 11, 16, 21). Seizure disorder as seen in our patient is an uncommon manifestation of calvarial haemangiomas. To the best of our knowledge and available literature, this is the first recorded case of calvarial haemangioma causing seizure disorder. Haemangiomas of the maxillary and mandibular regions cause excessive bleeding during surgery or tooth extraction (23). Loss of vision, pain and proptosis are seen in lesions involving the orbit (15).

Haemangiomas usually produce a radiating lattice-like or web-like trabecular pattern giving the typical "sunburst" appearance on radiographs. This is usually due to initial osteoclastic activity and a secondary osteoblastic remodeling with trabecular bone (16). This feature is not always present in all cases.

Most of the lesions often expand outwards leaving the inner table intact (21, 23) but the lesion in our patient involved both inner and outer tables of the skull with resultant compression of the brain and probably irritation of the underlying meninges (Figure 1 A, B) This, in our consideration contributed to the seizure disorder noted in this patient.

Cavernous hemangiomas may resemble other tumors of the skull, making diagnosis uncertain until surgical excision and histology (24). Such lesions include osteoma, osteosarcoma, aneurismal bone cyst, giant cell tumor, fibrous dysplasia, intraosseous meningioma, metastatic disease, Paget disease, dermoid or epidermoid cyst and acoustic schwannoma (5, 8, 14, 16, 26).

The current treatment of choice for cranial hemangioma is enbloc surgical resection (3, 13, 15, 16, 18, 19). The removal of a rim of normal bone is recommended to prevent recurrence (13, 19, 22). Cranioplasty with methylmethcrylate yields satisfactory cosmetic results (8, 21), as in our patient. Curettage and radiation have also been used in treating this lesion (25). Gamma-knife has also been used to treat cavernous hemangioma with satisfactory results (17). There is a risk of malignant transformation following radiotherapy (10). Radiotherapy is therefore reserved for unresectable lesions, partially resected tumors and in patients who reject surgical therapy (6, 13, 21, 22).

Anti epileptic drug becomes necessary in any patient like ours who develop seizures and such patient should be followed up till seizure abates and drug discontinued.

Conclusion

Intraosseus calvarial hemangiomas are rare slow-growing tumors with varied clinical features based on location. We report this first case of calvarial haemangioma causing seizure disorder. Surgical enbloc resection with margin of normal bone provides cure and cranioplasty with methylmethacrylate produces satisfactory results.

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